Remarks

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks. Claims 1, 3-5, 9, 11-14, 16-26, 28-38 and 40-43 are pending in the application.

Cited Art

The Action cites Nguyen et al., U.S. Patent No. 6,393,156 (hereinafter "Nguyen"); Malvar et al., U.S. Patent No. 5,805,739 (hereinafter "Malvar"); and Kikuchi et al., U.S. Patent No. 6,064,776 (hereinafter "Kikuchi").

Patentability of Claims 1, 3-5, 9-14, 16-26, and 28-41 Under 35 USC § 103(a)

The Action rejects claims 1, 3-5, 9-14, 16-26, and 28-41 under 35 U.S.C § 103(a) as unpatentable over Nguyen in view of Malvar, and further in view of Kikuchi. Applicants respectfully traverse the rejection.

Claims 1, 3-5, 14, 16-26, and 28-37

Claim 1 is directed towards a digital signal processing system with a block transform-based codec that employs a pre-filter at the encoder and post-filter at the decoder. The claim further specifies, "wherein the pre-processing filter is more relaxed and the post-processing filter is more aggressive relative to filters that are respectively inverses of the other." Similar language is recited in independent claims 14 and 28. As discussed in the Amendment filed July 23, 2007, the terms "more relaxed" and "more aggressive" are defined in terms of eigenvalues, as also further specified in the dependent claims 3-5.

As can be seen with a straightforward reading of this phrase ("wherein the pre-processing filter is more relaxed and the post-processing filter is more aggressive relative to filters that are respectively inverses of the other"), there are actually several requirements presented in this language:

1) The encoder-side pre-filter is more relaxed than an inverse of the decoder side post-filter.

3) The decoder-side post-filter is more aggressive than an inverse of the encoder-side pre-filter.

The cited art fails to teach or suggest these required elements of the language of claim 1.

The Office recognizes that the asserted combination of Malvar and Nguyen lacks that "the pre-processing filter is more relaxed and the post-processing filter is more aggressive relative to filters that are respectively inverses of the other." (Action at page 3.) The Office alleges that Kikuchi "discloses making the filtering more intense for (i.e., more aggressive) for smaller adjacent pixel differences and less intense (i.e., more relaxed) for larger adjacent pixel values (Kikuchi: column 15, lines 9-56)..." (Action at page 3.)

Yet, even if one of ordinary skill in the art were to modify the asserted combination of Malvar and Nguyen to include Kikuchi's selection of more intense filter for small adjacent pixel differences and less intense filter for larger adjacent pixel values, it would still not result in the signal processing system as recited in claim 1. As just pointed out, the language of claim 1 requires that the encoder side pre-filter is more relaxed relative to an inverse of the decoder-side post-filter, whereas the decoder side post-filter is more aggressive relative to an inverse of the encoder-side pre-filter. However, Kikuchi discloses that the less intense/more intense filter are applied in a spatially selective manner across an image depending on whether the adjacent pixel values being filtered are "larger" or "smaller." This fails to teach or suggest the relative aggressiveness of encoder-side versus decoder-side filters. Much less that the encoder-side pre-filter is more relaxed than the decoder-side post-filter's inverse, and decoder-side post-filter is more aggressive.

For at least this reason, independent claims 1, 14 and 28 along with their dependent claims 3-5, 16-26 and 29-37 clearly should be patentable over this cited art.

Claims 9, 11-13, 38 and 40-41

Independent claims 9 and 38 relate to an inventive aspect involving selecting the pair of encoder-side pre-filter and decoder-side post-filter based on the quantization parameter. In particular, independent claim 9 recites, "a switch for selecting a pair of pre-processing and post-processing filters from the set for use with the block transform-based codec according to the quantization parameter." Independent claim 38 similarly recites, "a switch for selecting among the post-processing filters from the set for use with the block transform-based codec according to the quantization parameter."

The cited art fails to teach of suggest that a codec select a pair of encoder-side pre-filter and decoder-side post-filter based on the quantization parameter chosen for the encoding. Malvar in Figures 4-5, and at column 6, line 57 through column 7, line 35 presents varies

performance graphs illustrating the results of using Malvar's Lapped Orthogonal Vector Quantization (LOVQ) compression system versus a previous Vector Quantization (VQ) compression system. Figure 4 illustrates a comparison of the original speech signal, a reconstruction of the speech signal using LOVQ, and a reconstruction using VQ. Figure 5 is a graph of the coding gains from these approaches. There is no statement or suggestion in this description for the codec to selectively switch between pairs of encoder/decoder filters according to a quantization parameter that relates to the quantization applied at encoding.

Kikuchi also fails to teach or suggest switching between pairs of encoder/decoder filters based on the quantization parameter that controls the amount of quantization used at encoding. Kikuchi describes varying the intensity of a spatial filter depending on the picture content itself. In particular, the intensity of filtering is varied adaptively according to the amount of difference between adjacent pixels. (Kikuchi at column 15, lines 6-15.) This description by Kikuchi of adaptively varying filter intensity by difference between adjacent pixel values would not have led the practitioner of ordinary skill to implement selection of the pair of encoder-side and decoder-side filters based on the quantization parameter as recited in the claims.

For at least this reason, independent claims 9 and 38 along with their dependent claims 10-13 and 40-41 should be patentable over this art.

Request for Information Disclosure Statement to Be Reviewed

Applicants note that the Action does not include an initialed copy of the Form 1449 which accompanied an Information Disclosure Statement filed on July 23, 2007. Applicants request the Examiner provide an initialed copy of the Form 1449.

Interview Request

If the claims are not found by the Examiner to be allowable, the Examiner is requested to call the undersigned attorney to set up an interview to discuss this application.

Conclusion

The claims in their present form should be allowable. Such action is respectfully requested.

Respectfully submitted,

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